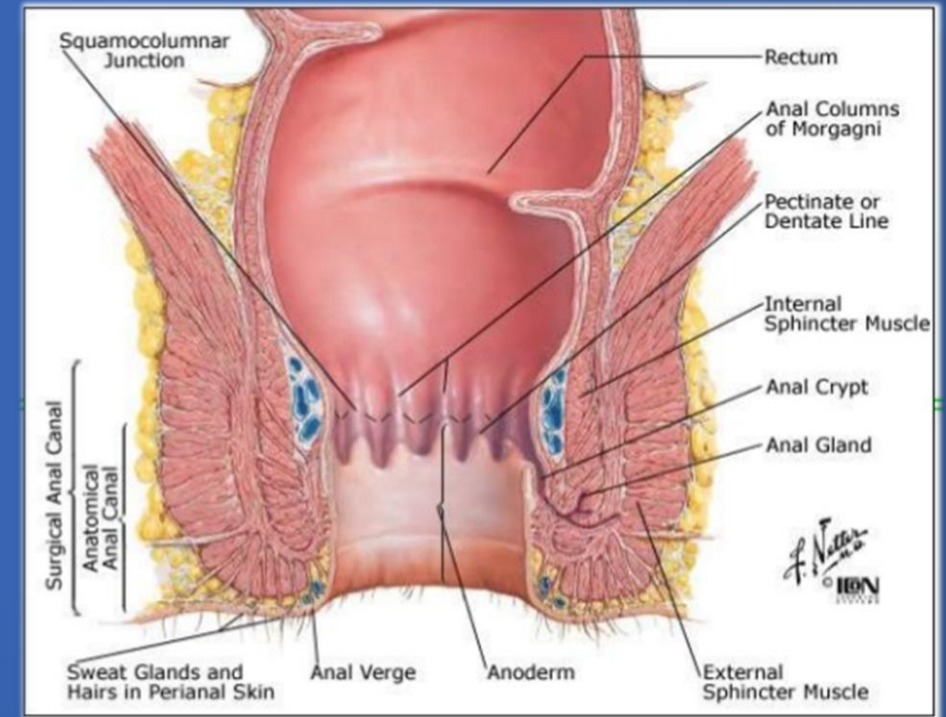


Anorectal disease

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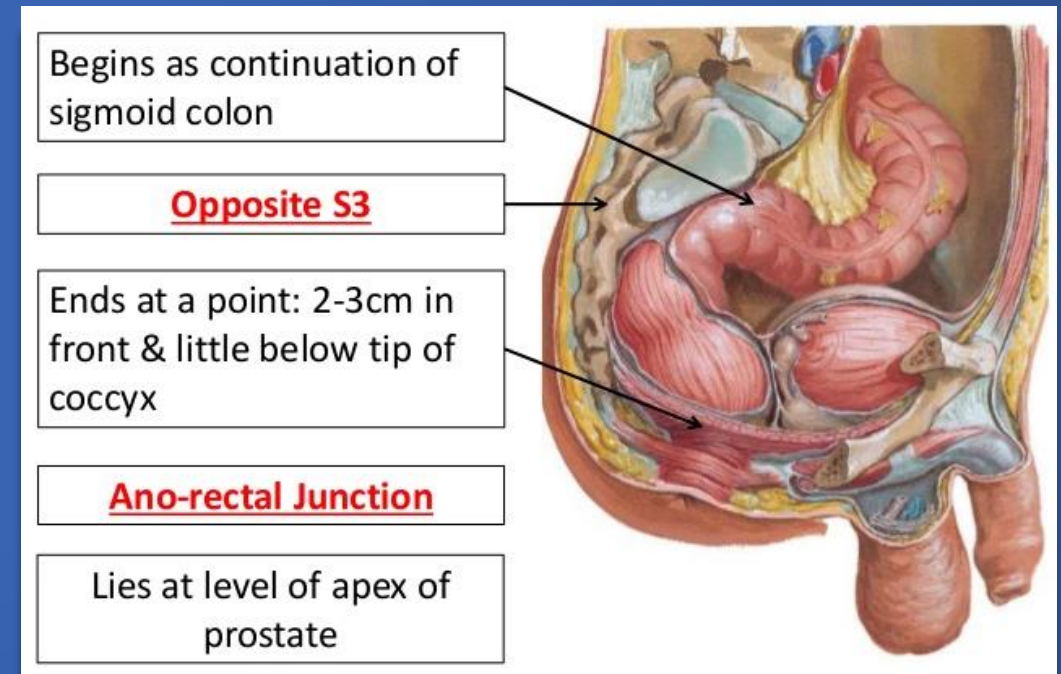


Objectives

- Introduction
- Common Ano-rectal diseases
 - Hemorrhoids
 - Anal Fissure
 - Fistula in Ano
 - Anal abscess
- Anal cancer

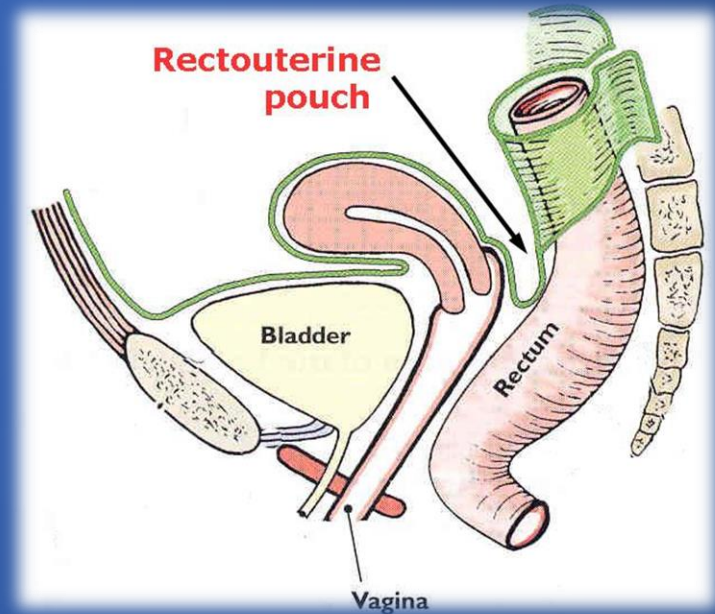
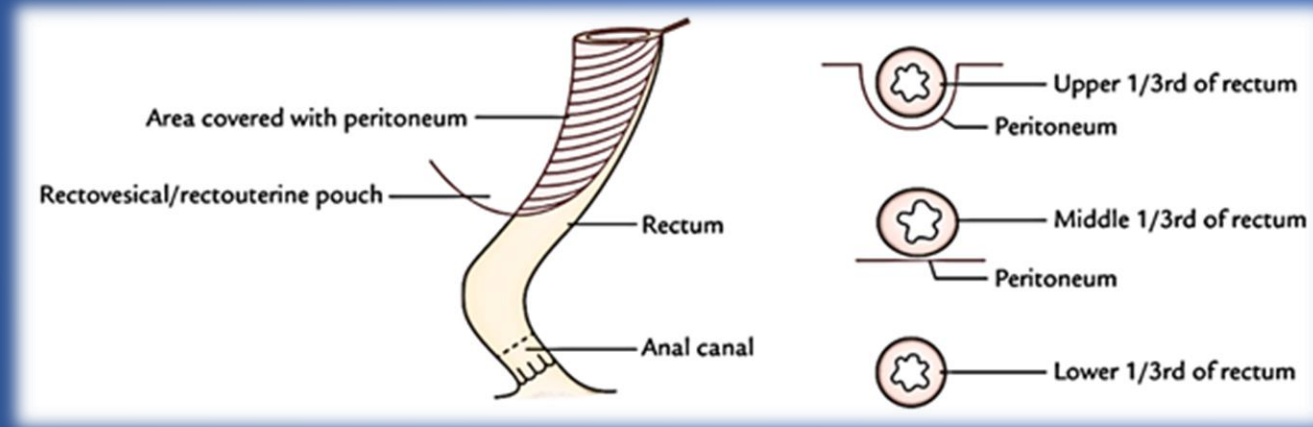
Introduction

- Rectum intestinum, means straight intestine
- Different definitions of the rectum:
 - Surgeons define the rectum as starting at the level of the sacral promontory
 - Anatomists define the rectum as starting at the level of the 3rd sacral vertebra.
- Length 12- 15 cm.
- Outer layer consists of longitudinal muscle.



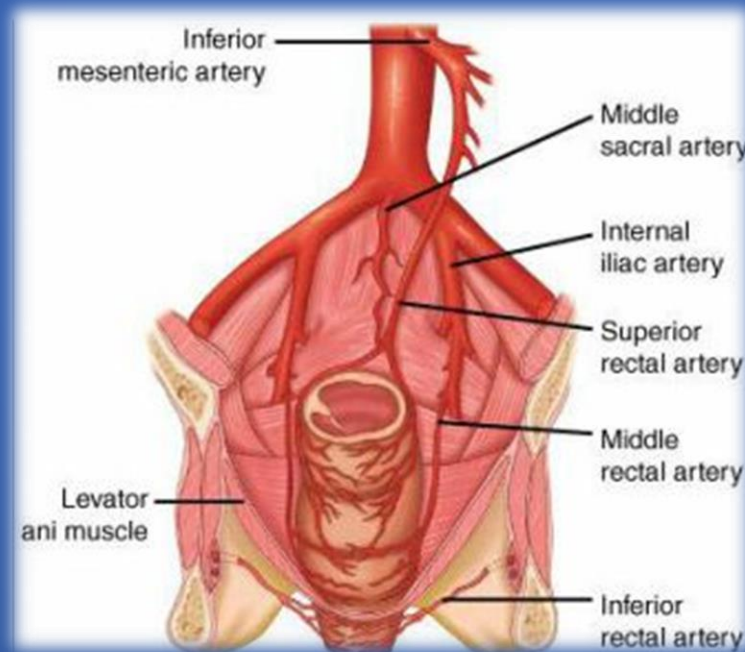
Introduction

- Upper third of the rectum has peritoneal cover on its front and sides,
- Middle third is peritonealized only anteriorly
- Lower third is located extraperitoneally



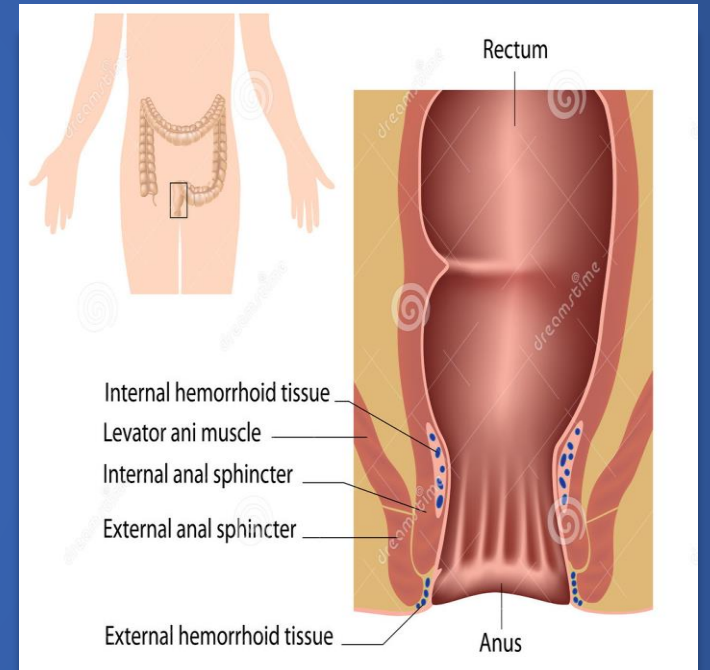
Introduction

- The superior rectal artery is the continuation of the inferior mesenteric artery, supplying the rectum and anastomosing with the middle and inferior rectal arteries (branches of the internal iliac arteries)



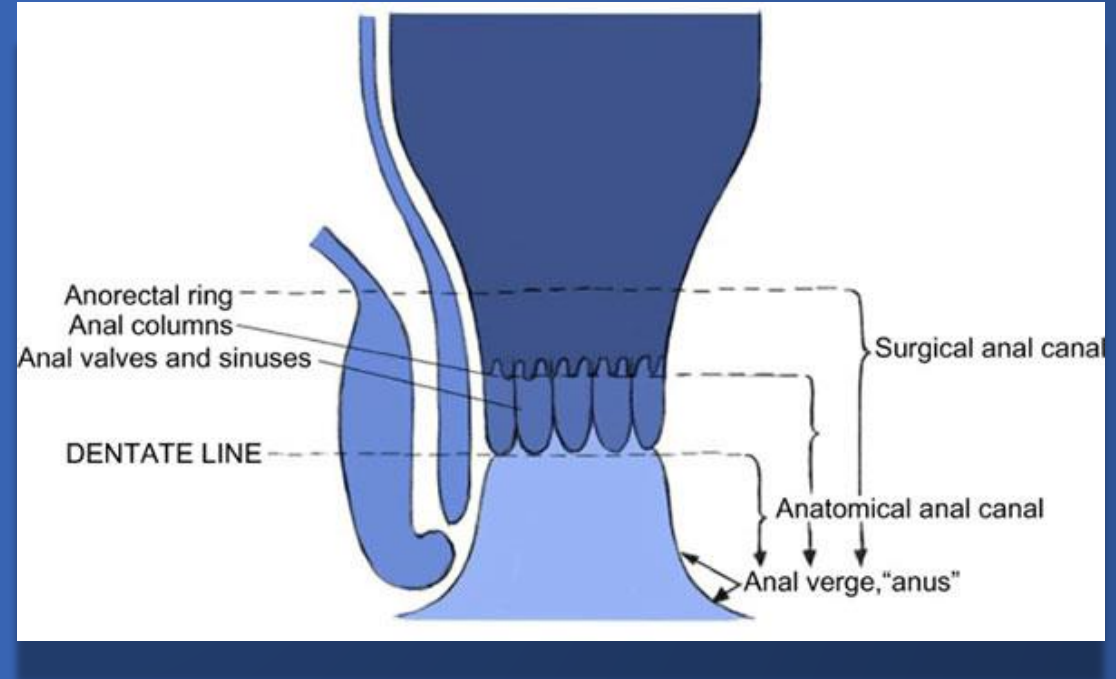
Introduction

- The anal canal:
 - Most terminal part of the lower GI
 - Completely extraperitoneal
 - Blood supply of anal canal:
 - Upper part:
 - superior rectal (hemorrhoidal) artery (inferior mesenteric artery).
 - lower part:
 - Middle rectal artery (internal iliac artery)
 - Inferior rectal artery (internal pudendal artery)
 - Lymphatics from the anal canal drain into the superficial inguinal group of lymph nodes



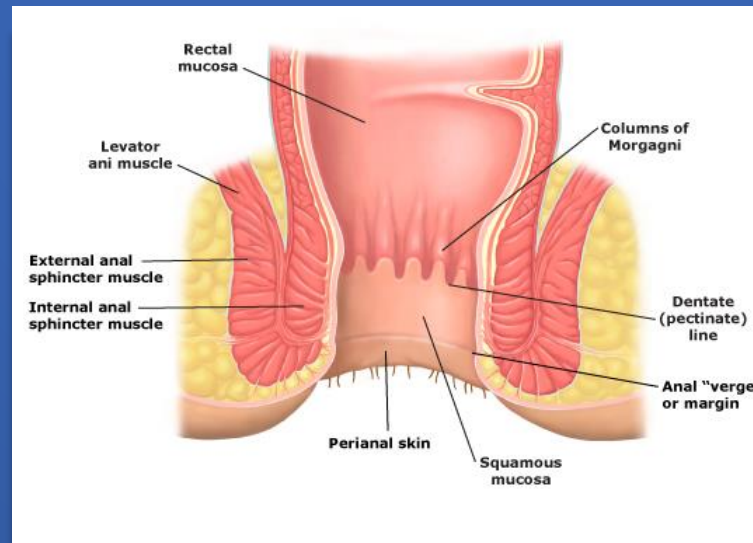
Introduction

- Anal canal:
 - Surgical anal canal:
 - 4 cm long
 - Extends from the anal verge distally, to the anorectal ring, proximally.
 - Anatomical anal canal:
 - 2 cm long
 - Extends from the anal verge distally, to the dentate line proximally.
- The dentate line is the junction of the ectoderm and endoderm in the anal canal.



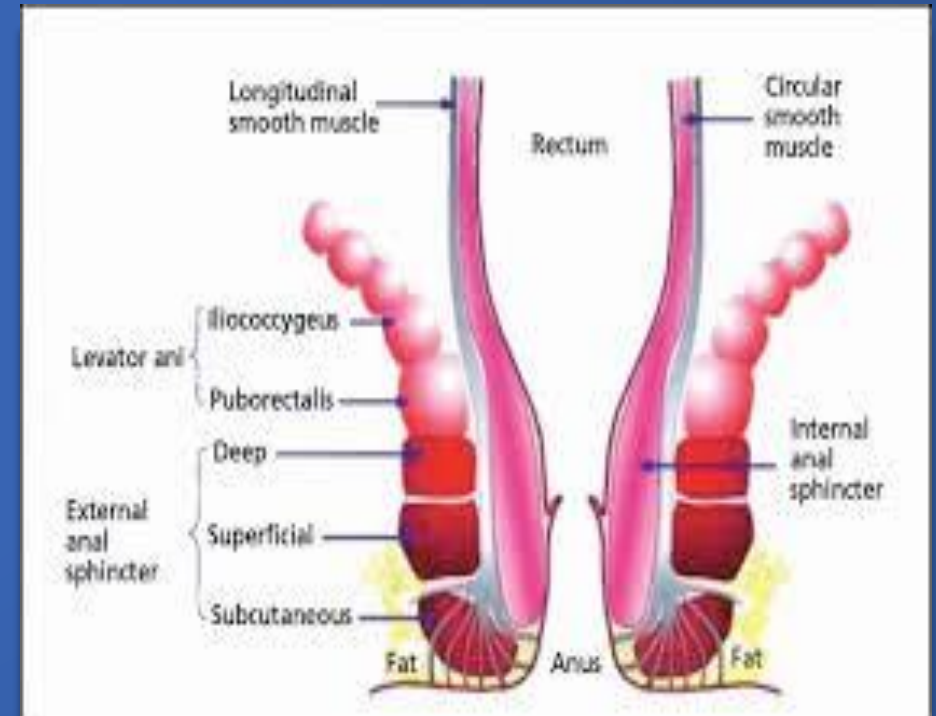
Introduction

- Transitional zone:
 - Part of anal canal just above the pectinate (dentate) line for about 1-2 cm
- Anal columns (of Morgagni) are 6-10 longitudinal (vertical) mucosal folds in the upper part of the anal canal.

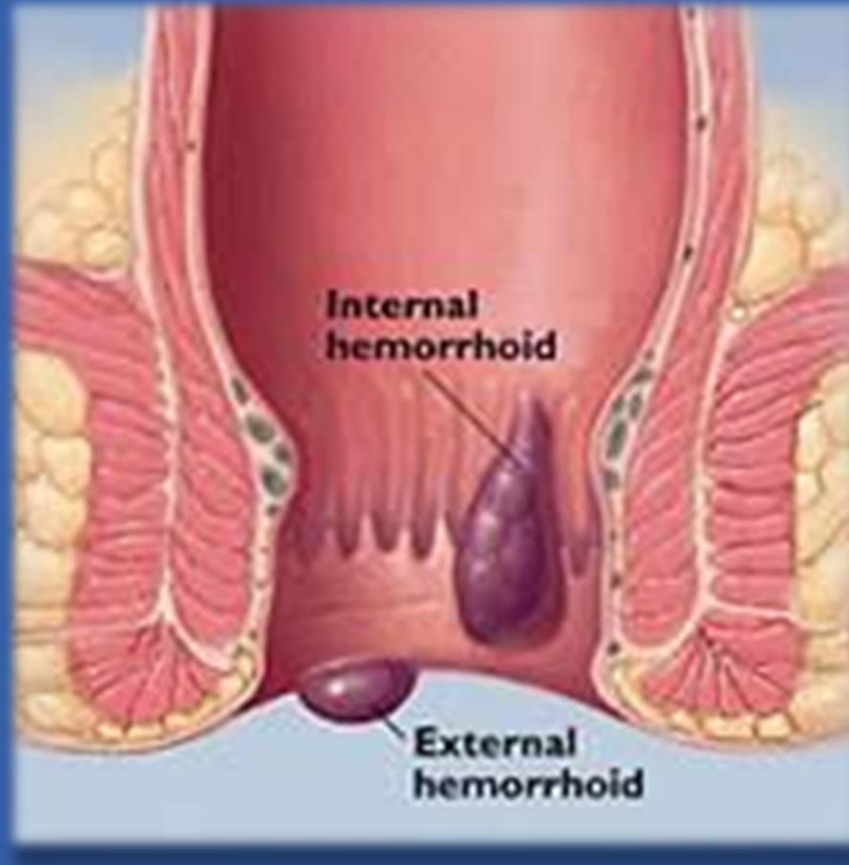


Introduction

- External anal sphincter:
 - 3 parts:
 - Subcutaneous
 - Superficial
 - Deep.
 - Skeletal muscle, is under **voluntary** control, and is supplied by pudendal nerves (S2-S4).
 - Proximally, merges with the levator ani
- Internal anal sphincter:
 - Circular smooth muscle layer of the rectum.
 - **Involuntary**



Haemorrhoides

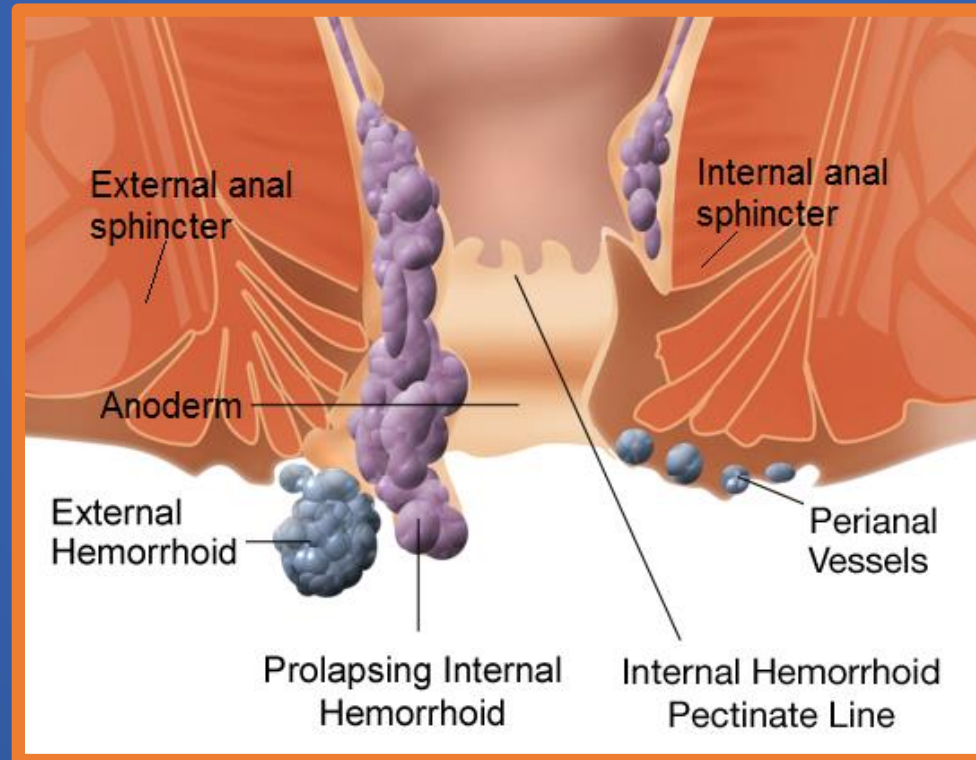


Haemorrhoides

- Swollen of normal blood vessels at lower rectum (hemorrhoidal venous cushions)
- Hemorrhoidal venous cushions are a normal part of the human anorectum and arise from subepithelial connective tissue within the anal canal.
- Normal hemorrhoidal tissue:
 - 15-20% of resting anal pressure
 - Provides important sensory information, enabling the differentiation between solid, liquid, and gas
 - Help in defecation

Haemorrhoides

- Classified by their anatomic origin within the anal canal and by their position relative to the dentate line into internal and external



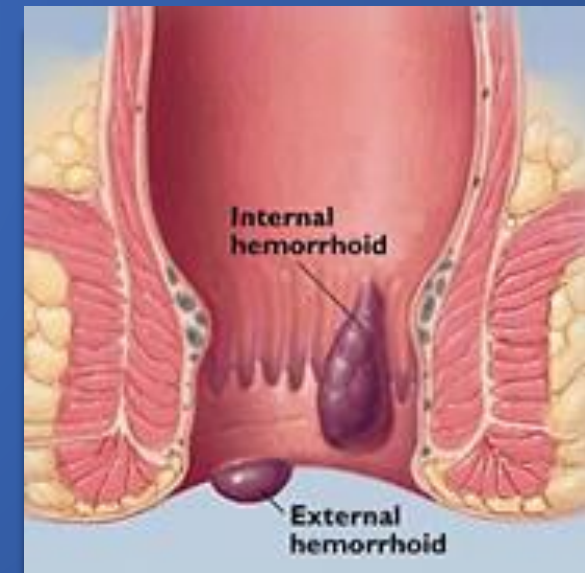
Haemorrhoides

- **External hemorrhoids:**

- Develop from ectoderm and are covered by squamous epithelium.
- Innervated by cutaneous nerves that supply the perianal area. These nerves include the pudendal nerve and the sacral plexus.

- **Internal hemorrhoids:**

- Derived from endoderm and lined with columnar epithelium of anal mucosa.
- No somatic sensory nerves



Haemorrhoides

- Internal hemorrhoids drain through the superior rectal vein into the portal system.
- External hemorrhoids drain through the inferior rectal vein into the inferior vena cava.
- Rich anastomoses exist between these 2 and the middle rectal vein, connecting the portal and systemic circulations.

Haemorrhoides

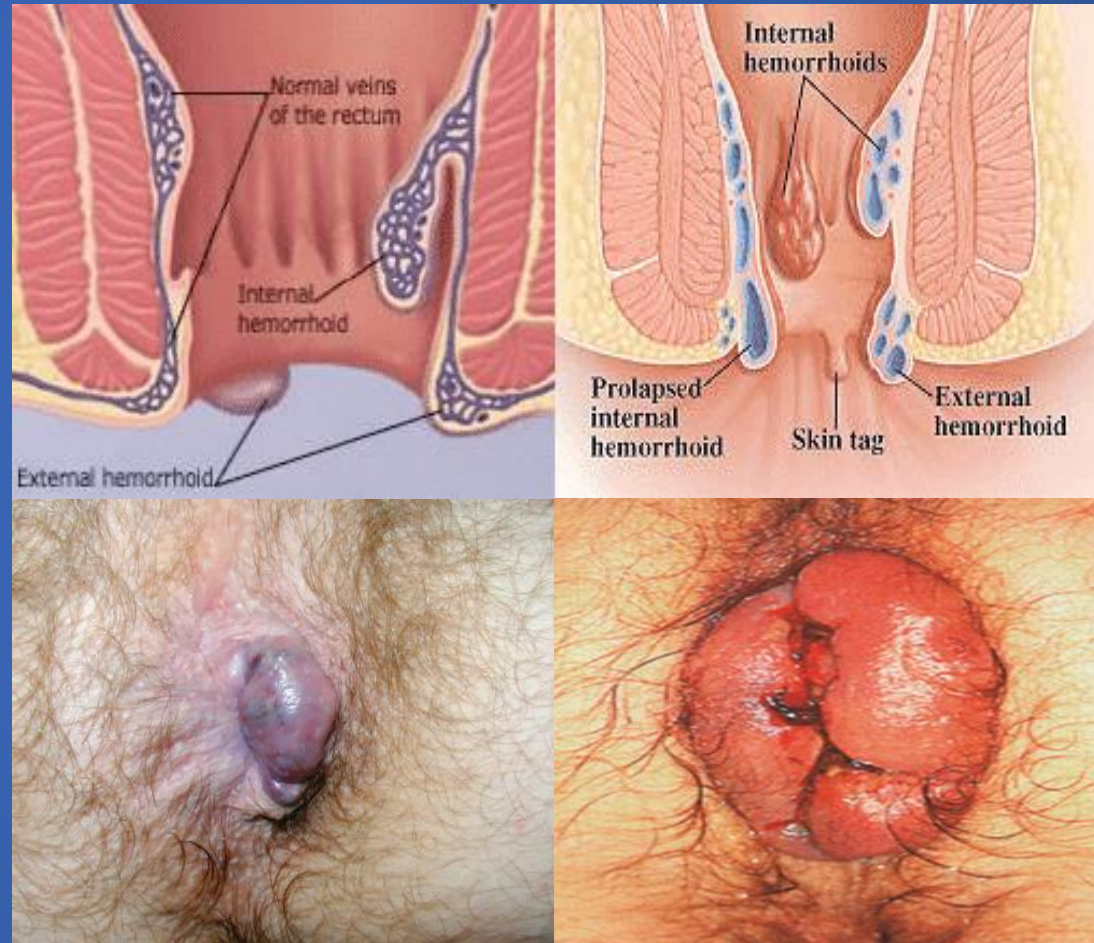
- Internal hemorrhoids have 3 main cushions:
 - Left lateral
 - Right posterior (most common)
 - Right anterior areas
- External hemorrhoidal veins are found circumferentially under the anoderm
- Minor tufts can be found between the major cushions.

Haemorrhoides

- Etiology:
- Degeneration of the supporting fibroelastic tissue and smooth muscle
 - Decreased venous return
 - Portal hypertension and anorectal varices
 - Increased intra-abdominal pressure:
 - Straining and constipation
 - Pregnancy (Combined !!)
 - Weight lifting

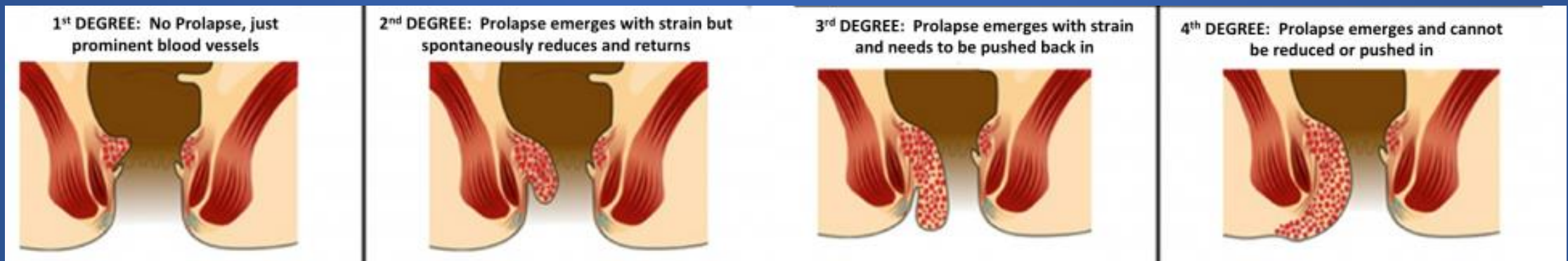
Haemorrhoides

- Symptoms:
 - Depends on the type
 - Fresh PR bleeding
 - Anal pain with swelling
- Complications:
 - Thrombosis
 - Prolapse
 - Erosions



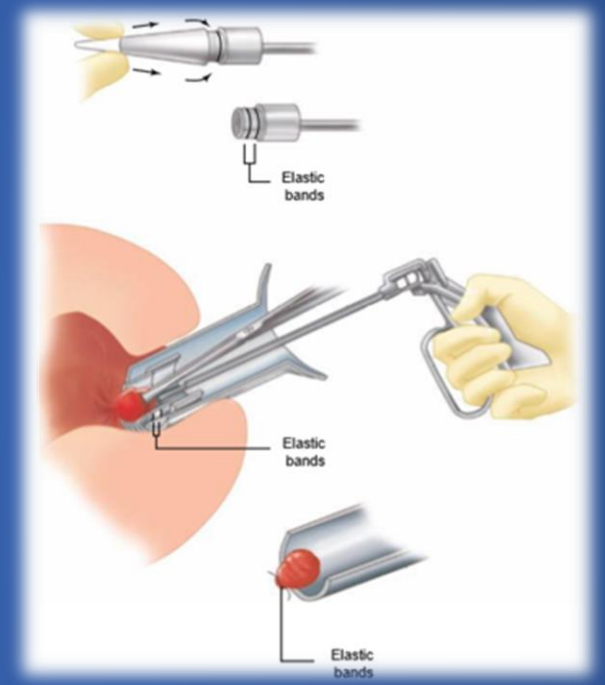
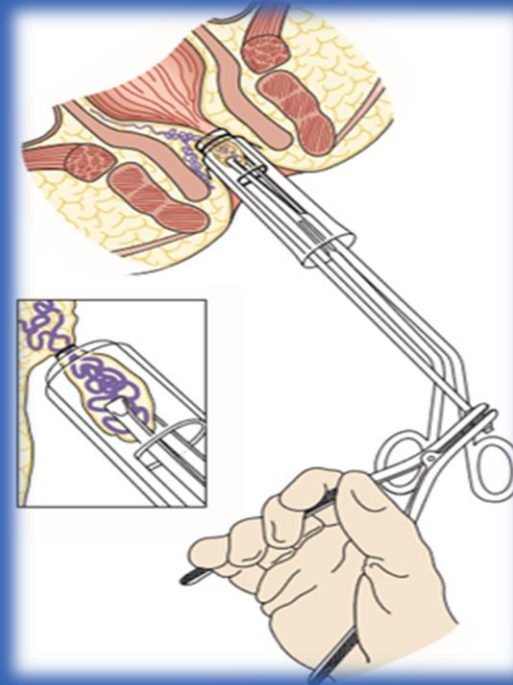
Haemorrhoides

- Grades of internal types:
 - Grade I: Project into the anal canal and often bleed
 - Grade II: Protrude beyond anal verge with straining but reduced spontaneously
 - Grade III: Protrude spontaneously and require manual reduction
 - Grade IV: chronically prolapse and cannot be reduced

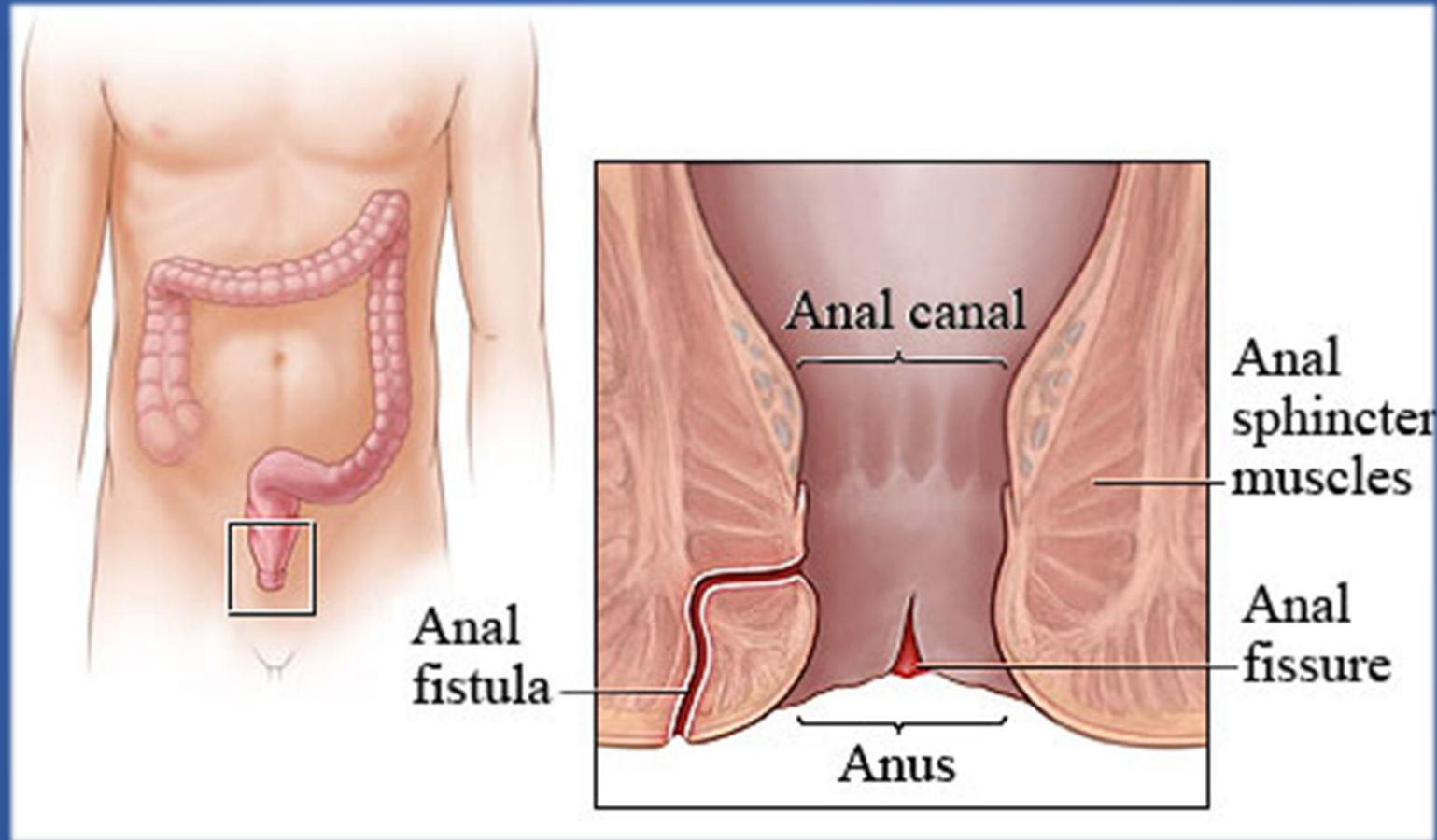


Haemorrhoides

- Diagnosis:
 - Clinically, DRE, Anoscope
- Management:
 - Type, symptoms, and grades
 - Local vs systemic
 - Conservative therapy
 - Surgical therapy:
 - Indications
 - External haemorrhoides: Incision, & clot evacuation
 - Internal haemorrhoides: Banding, Conventional, Stappled, ligasure



Anal fissure



Anal fissure

- Painful linear tear or crack in the distal anal canal
- Acute vs chronic
- In short term: involves only the epithelium
- In long term: involves full thickness of the anal mucosa
- The most commonly observed abnormalities:
 - Hypertonicity & hypertrophy of the internal anal sphincter
 - Elevated anal canal
 - Elevated internal sphincter resting pressures
 - Relative ischemia, delayed healing, & healing by fibrosis

Anal fissure

- Pathophysiology and Etiology
 - Exact etiology is unknown
 - Risk factors are:
 - Trauma from the passage of a particularly hard/ watery stool
 - Low-fiber diets (lacking in fruits and vegetables)
 - Prior anal surgery is a predisposing factor because scarring from the surgery may cause either stenosis or tethering of the anal canal, which makes it more susceptible to trauma from hard stool

Anal fissure

- Symptoms:
 - Acute vs chronic
 - Severe pain during defecation
 - Lasts several minutes to hours afterward
 - Recurrent
 - Patient afraid or to have a bowel movement,
 - Leading to a cycle of worsening constipation, harder stools, and more pain
 - Bright blood on toilet paper, or stool
 - Commonly, no significant bleeding.

Anal fissure

- Clinically:
 - Usually diagnostic
 - Location:
 - Midline (Posterior- Anterior- Combined)
 - Off midline:
 - Possibility of other bowel conditions
 - (eg, Crohn disease),
 - Infection (eg, sexually transmitted disease, or AIDS)
 - Cancer.



Anal fissure

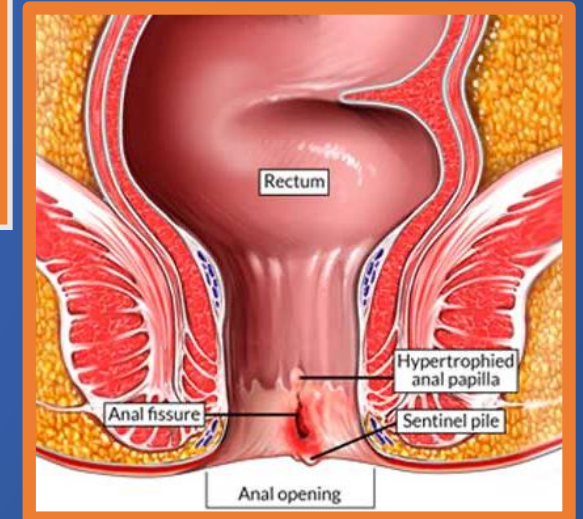
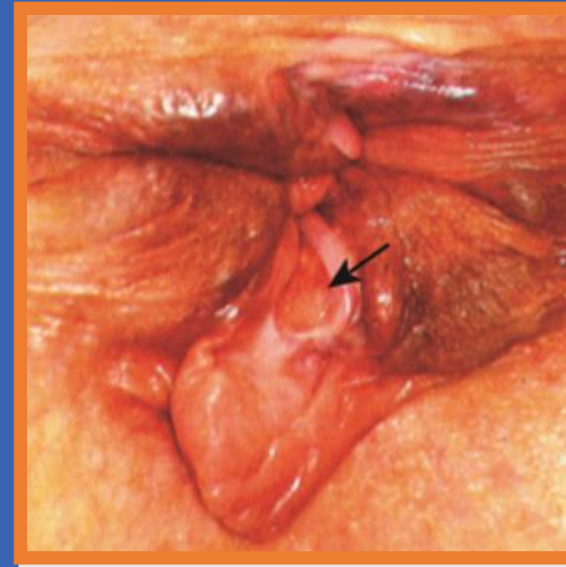
- Management:

1. Conservative:

- Modify life-style
- Food (high fiber, low fat, avoid spicy)
- Sitz bath
- Avoid constipation/ diarrhea

2. Medical therapy:

- Local analgesia (Lidocaine)
- Sphincter relaxation:
 - Nitroglycerin 0.4% (NTG; also called glycerol trinitrate)
 - Diltiazem 2%
- Botulinum toxin (eg, onabotulinumtoxin [BOTOX®])

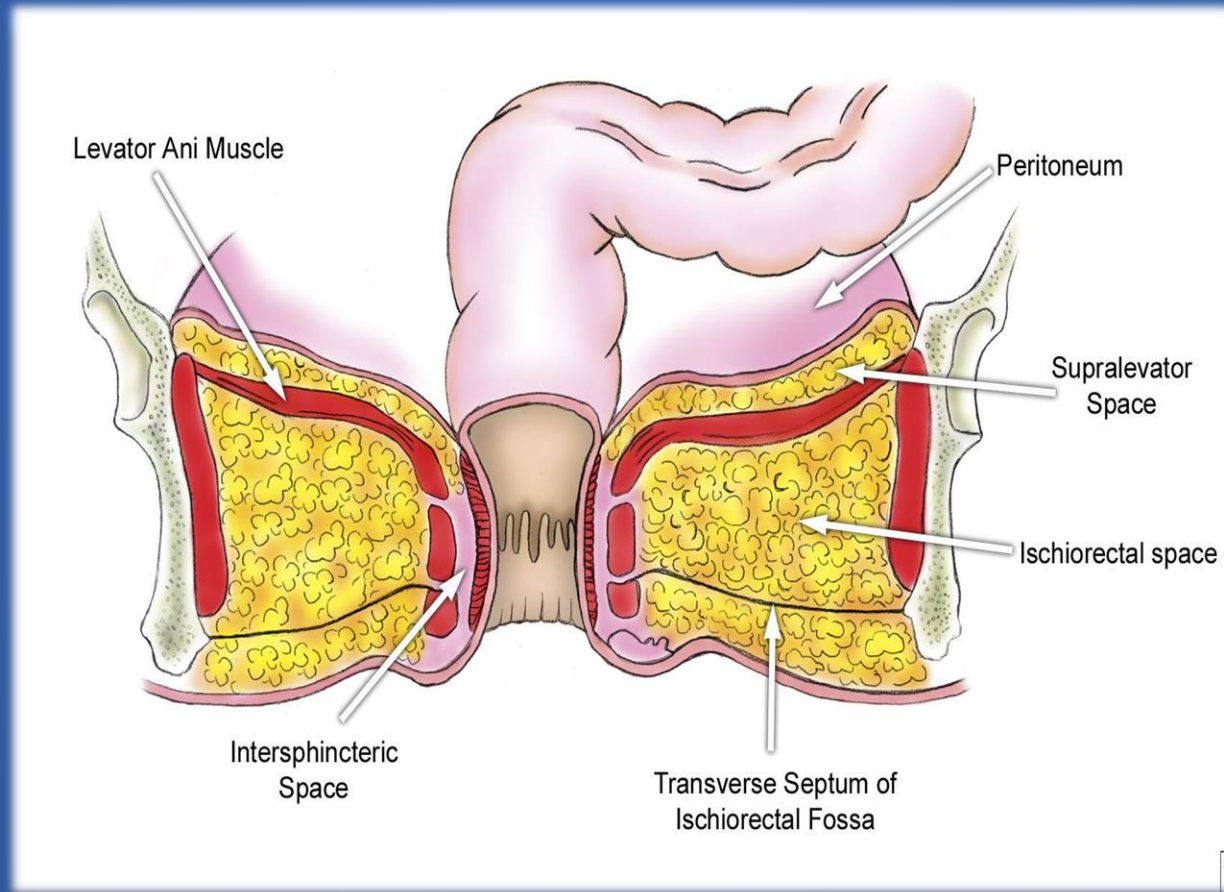


Anal fissure

3. Surgery:

- Lateral internal sphincterotomy
- Indications:
 - Failure of conservative therapy
 - Symptomatic chronic fissure
- Complications from surgery for anal fissure include the following:
 - Infection
 - Bleeding
 - Fistula development
 - Incontinence (the most feared complication)
 - Recurrence/ nonhealing

Fistula in Ano

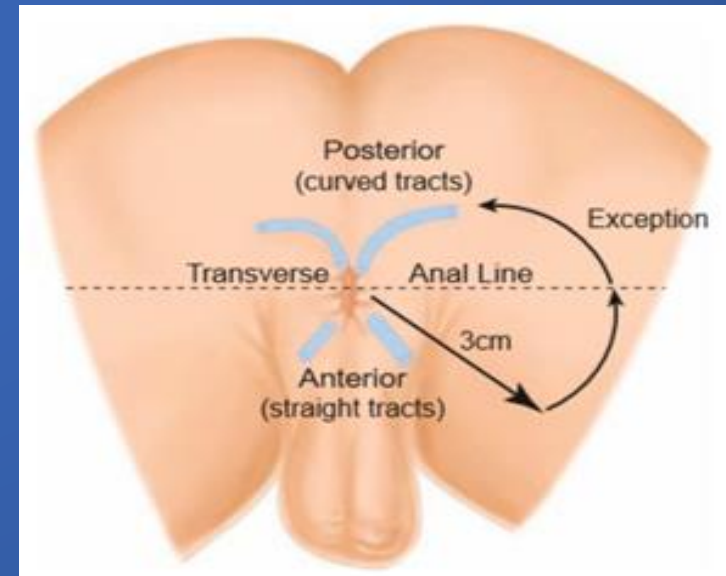


Fistula in Ano

- Abnormal chronic tract or cavity that is lined with granulation tissue
- Connects a primary opening inside the anal canal to a secondary opening in the perianal skin
- Secondary tracts may be multiple and can extend from the same primary opening.
- Most as result of cryptoglandular infection, & abscess.
- Low vs High located
- Symptoms range from minor discomfort and discharge with resultant hygienic problems to sepsis.

Fistula in Ano

- Goodsall's rule:
 - Help to identify the anatomy
 - Fistulas with an external opening anterior to a plane passing transversely through the center of the anus will follow a straight radial course to the dentate line.
 - Fistulas with external openings posterior to this line will follow a curved course to the posterior midline (horseshoe)

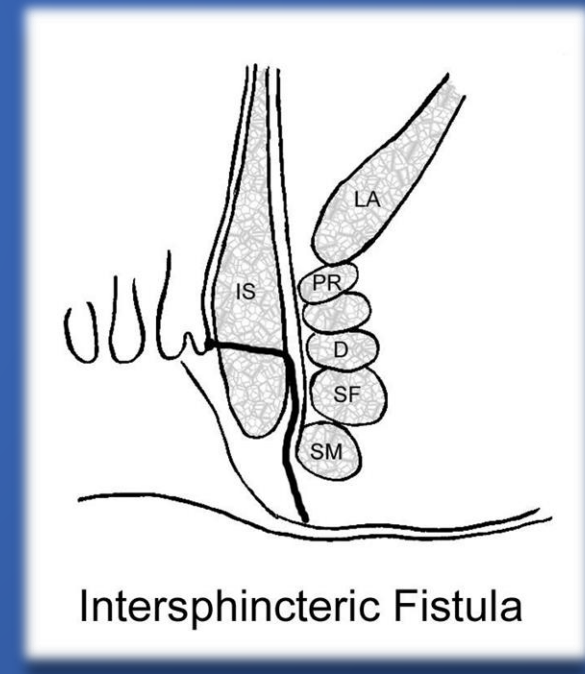


Fistula in Ano

- **Exceptions to Goodsall rule:**
 - External openings lying more than 3 cm from the anal verge.
 - These almost always originate as a primary or secondary tract from the posterior midline, consistent with a previous horseshoe abscess

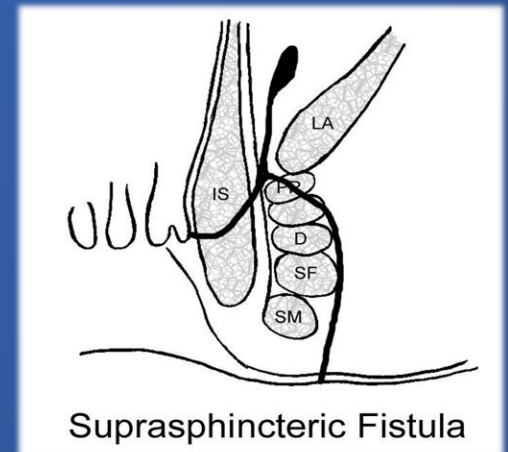
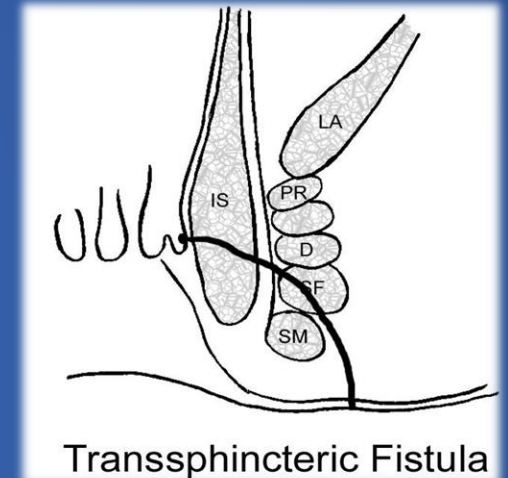
Fistula in Ano

- The classification system developed by Parks, Gordon, and Hardcastle (Parks classification) is the one most commonly used
- It defines 4 types of fistula-in-Ano as follow
 - **Intersphincteric:**
 - (70% of all anal fistulas)
 - It is the result of a perianal abscess
 - Between internal and external sphincter



Fistula in Ano

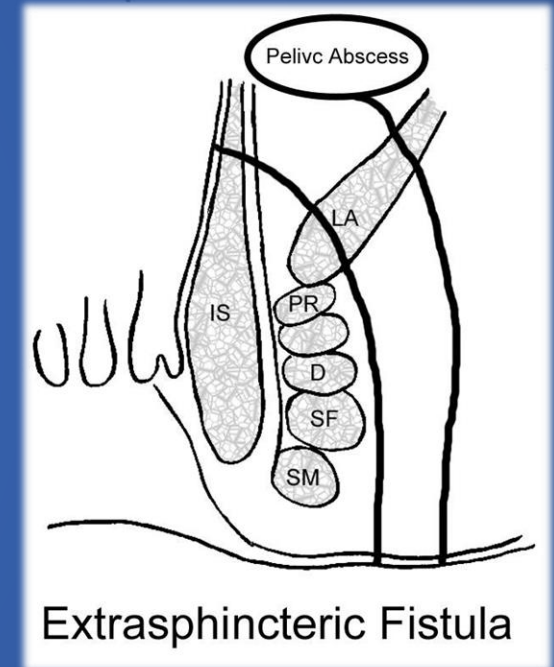
- Transsphincteric
 - Results from an ischiorectal fossa abscess
 - Into the ischiorectal fossa
- Suprasphincteric
 - Supralelevator abscess
 - Tracks superiorly to above the puborectalis



Fistula in Ano

- **Extrasphincteric**

- Arise from foreign body penetration of the rectum
With drainage through the levators, from penetrating injury to the perineum, from Crohn disease or Cancer, from pelvic inflammatory disease
- Tracking upward and through the levator ani muscles to the rectal wall, completely outside the sphincter mechanism





SUMMARY BOX 17.6

Fistula-in-ano

Aetiology

- Idiopathic (cryptoglandular) due to blockage of anal gland duct
- Crohn's disease
- Anorectal trauma
- Iatrogenic (surgical)
- Anorectal carcinoma.

Rare causes

- Ulcerative colitis
- Tuberculosis
- Actinomycosis.

Treatment

- Low fistulae should be laid open
- Complex high fistulae require repair and/or seton insertion.

Fistula in Ano

- Patients often provide a reliable history of previous pain, swelling, and spontaneous or planned surgical drainage of an anorectal abscess. Signs and symptoms of fistula-in-ano, in order of prevalence, include the following:
 - Perianal discharge
 - Pain
 - Swelling
 - Bleeding
 - Diarrhea
 - Skin excoriation
 - External opening

Fistula in Ano

- Physical findings are the mainstay of diagnosis
- Digital rectal examination (DRE) may reveal a fibrous tract or cord beneath the skin
- Discharging perianal sinus
- Radiology:
 - Fistulography
 - Endoanal or endorectal ultrasonography
 - MRI
- Others: Scopes-

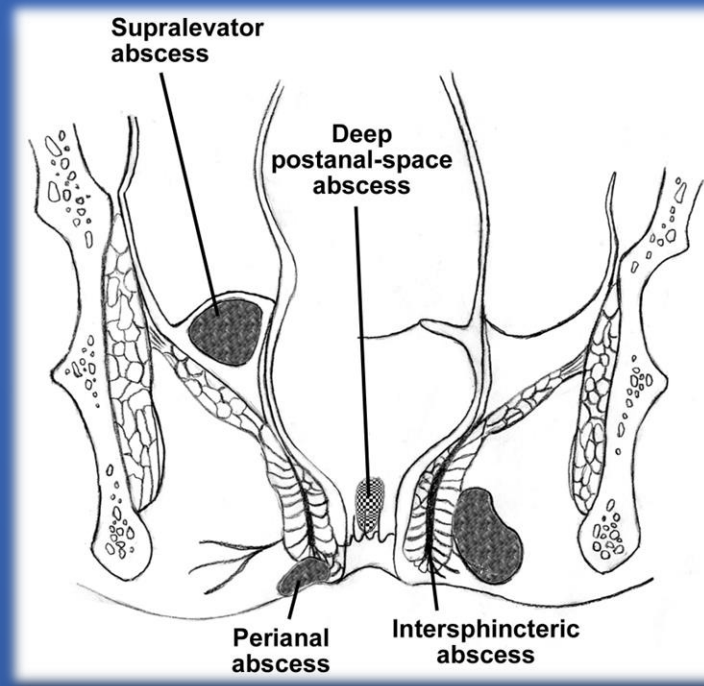
Fistula in Ano

- Treat abscess first (Unless the fistula is superficial and the tract is obvious)
- Fistulotomy vs fistulectomy (+ EUA)
- One stage vs staged procedure
- Seton placement
- Plugs and Adhesives
- Ligation of the intersphincteric fistula tract (LIFT) Procedure:
 - A sphincter-sparing procedure for complex transsphincteric fistulas



Anal abscess

- An anorectal abscess originates from an infection arising in the cryptoglandular epithelium lining the anal canal



Anal abscess

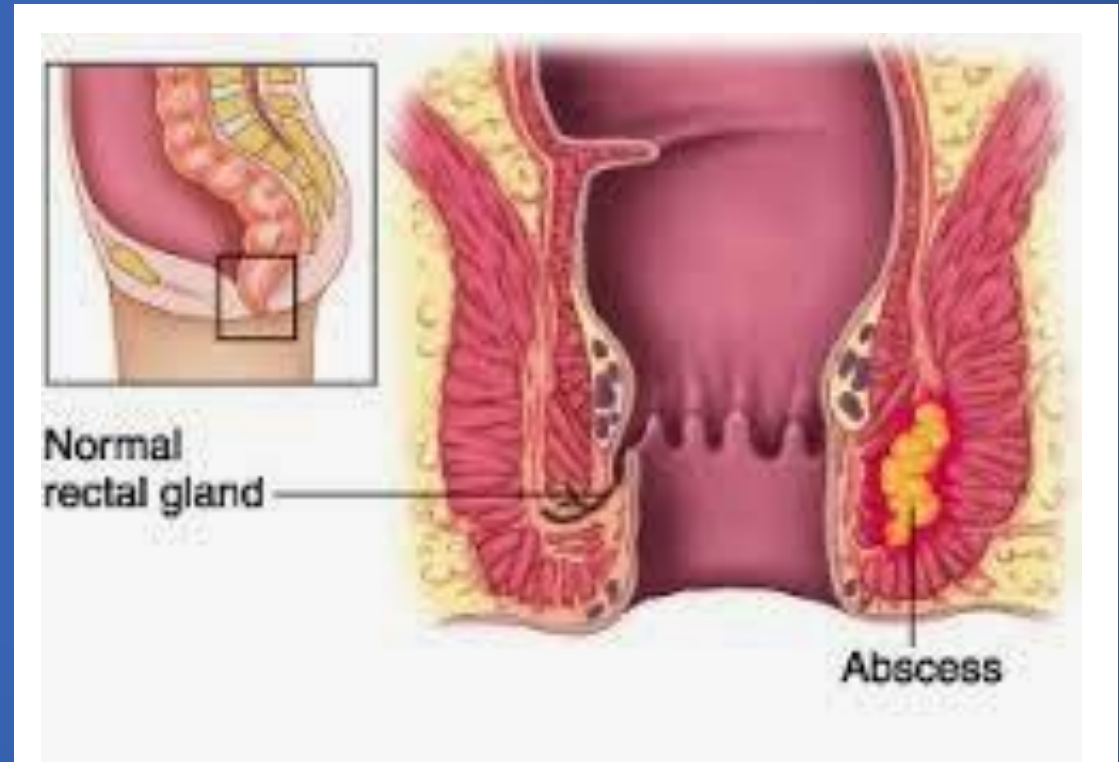
- Anorectal abscesses are classified into:
 1. Perinal: (most common type)
 2. Ischiorectal
 3. Intersphincteric
 4. Supralevator

Anal abscess

- Etiology:
 - Anal gland infection (aerobic and anaerobic bacteria)
 - Others (10%):
 - Crohn disease,
 - Trauma,
 - Immunodeficiency (HIV infection, malignancy)
 - Tuberculosis,
 - Hidradenitis suppurativa,
 - Sexually transmitted diseases
 - Radiation therapy
 - Foreign bodies
 - Perforated diverticular disease,, or appendicitis

Anal abscess

- Symptoms:
 - Pain (Perianal)
 - Swelling
 - Discharge
 - Constipation
 - Inflammatory symptoms (Fever, Chills, malaise)
- Inflammatory signs
- Tender DRE



Anal abscess

- Diagnosis:
 - Clinically
 - Trans-perineal ultrasonography
 - Radiology (CT/MRI)
 - Others (Colonoscope)
- Management:
 - I&D, packing, dressing
 - Antibiotics

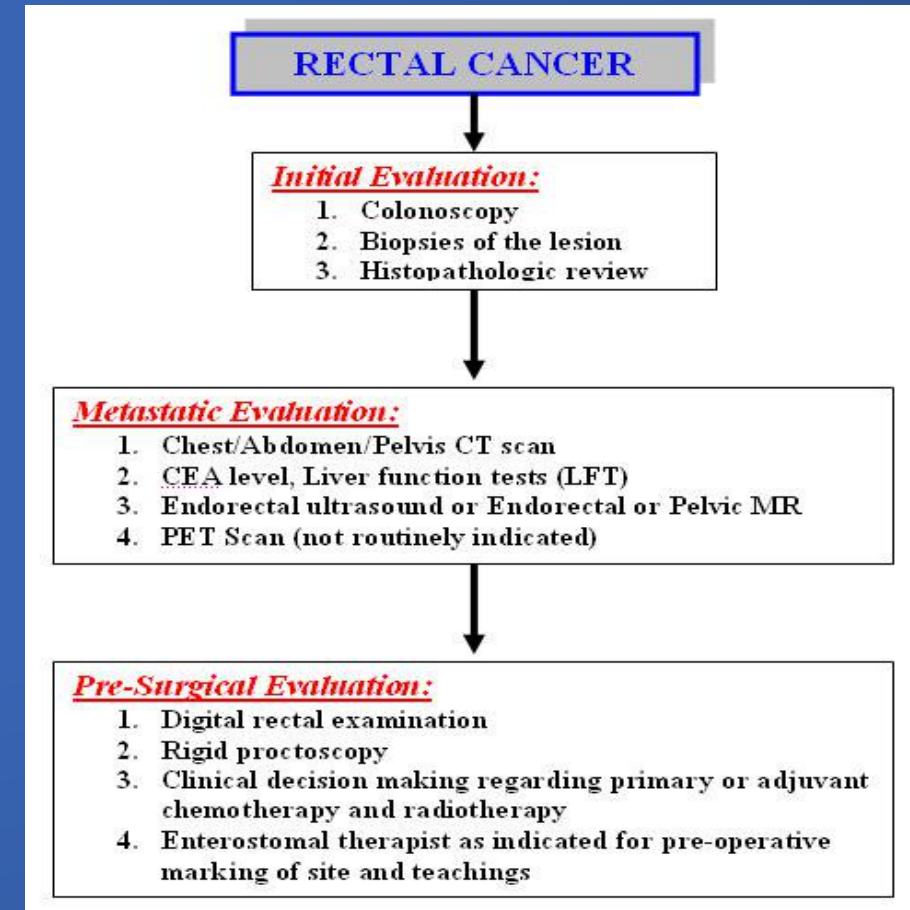


Anal abscess

- Complications of anorectal abscesses:
 - Fistula formation (30-60%)
 - Bacteremia and sepsis
 - Fecal incontinence

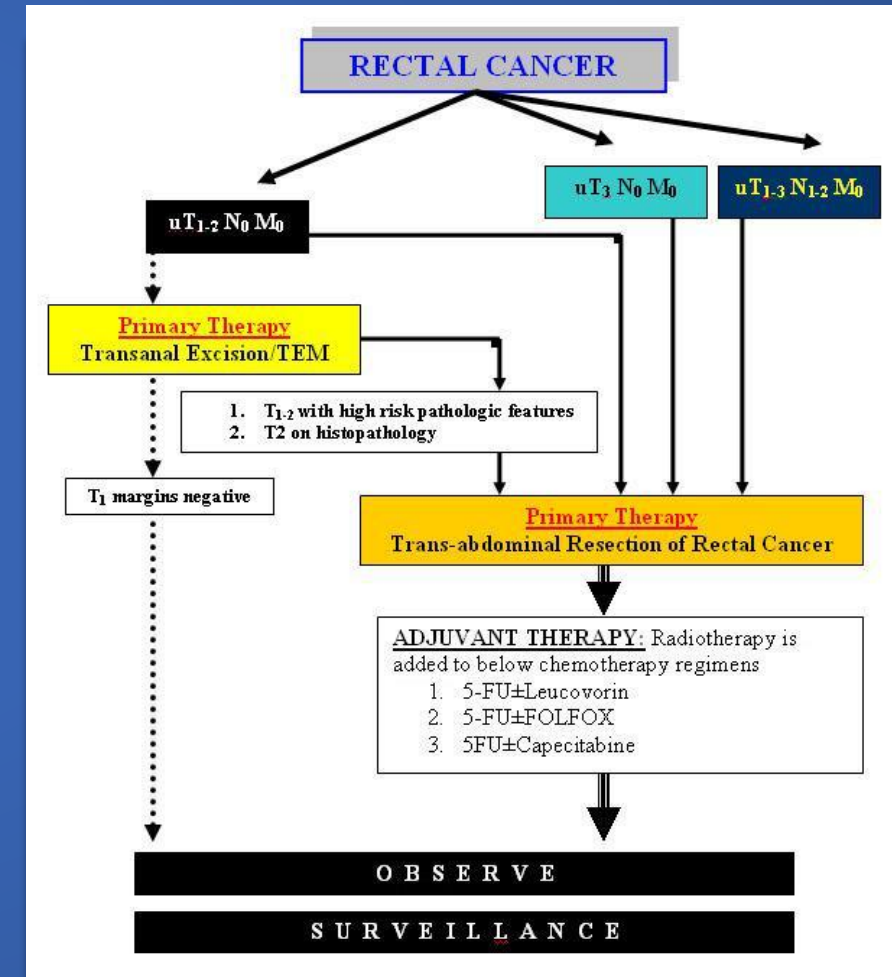
Rectal cancer

- Symptoms:
 - PR Bleeding (most common symptom)
 - Change in bowel habits is present in 43% of patients;
 - Incomplete rectal emptying



Rectal cancer

TNM Stage	Description
Tumor	
T1	Tumor invades submucosa
T2	Tumor involves muscularis propria but does not cross it
T3	Tumor extends beyond muscularis propria into mesorectal or pericolic fat
T4	Tumor invades adjacent organs or perforates the visceral peritoneum
Node	
N0	No nodal metastasis
N1	1–3 perirectal or pericolic nodes
N2	4 or more perirectal or pericolic nodes
Metastasis	
MX	Cannot be assessed
M0	No metastasis
M1	Distant metastasis



Rectal cancer

- Most of cases are sporadic
- Three pathways to colon and rectal carcinoma have been described:
 - Adenomatous polyposis coli (*APC*) gene adenoma-carcinoma pathway
 - Hereditary nonpolyposis colorectal cancer (HNPCC) pathway
 - Ulcerative colitis dysplasia

Rectal cancer

- Management:
 - Medical therapy
 - Neoadjuvant
 - Radiation therapy
 - Preop vs postop
 - Surgery:
 - Trans-anal excision
 - Abdominoperineal excision

References

- Principles and Practice of Surgery
 - Pg 263-277

Thanks